WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film;

a second step of holding a catalytic element that promote the crystallization of said semiconductor film in contact with said semiconductor film; and

a third step of irradiating a laser beam to said semiconductor film to crystallize said semiconductor film.

2. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film;

a second step of holding a catalytic element that promote the crystallization of said semiconductor film in contact with said amorphous silicon film; and

a third step of irradiating a laser beam shaped in a rectangle or a square while moving the laser beam from one side of said semiconductor film toward another side thereof to sequentially crystallize said semiconductor film to form a crystalline semiconductor film.

3. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film on a substrate having an insulating surface;

a second step of holding a catalytic element that promote the crystallization of said semiconductor film in contact with said semiconductor film; and

a third step of irradiating a laser beam shaped in a rectangle or a square from one side of said amorphous silicon film toward another side thereof while moving said substrate to sequentially crystallize said semiconductor film to form a crystalline semiconductor film.

4. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film;

a second step of holding a catalytic element contained in a solution which promote the crystallization of said semiconductor film in contact with said semiconductor film; and

a third step of irradiating a laser beam whose irradiation area in one shot is 10 cm^2 or more to said semiconductor film to crystallize said semiconductor film and to form a crystalline semiconductor film.

5. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film;

a second step of holding a compound containing a catalytic element which promote the crystallization of said semiconductor film in contact with said semiconductor film; and

a third step of irradiating a laser beam whose irradiation area in one shot is 10 cm^2 or more to said semiconductor film to crystallize said semiconductor film and to form a crystalline semiconductor film.

6. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film;

a second step of holding a catalytic element which promote the crystallization of said semiconductor film in contact with said semiconductor film;

a third step of irradiating a laser beam whose irradiation area in one shot is 10 cm^2 or more to said semiconductor film to crystallize said semiconductor film and to form a crystalline semiconductor film; and

a fourth step of conducting thermal oxide processing in an oxide atmosphere to form an oxide film on the surface of said crystalline semiconductor film and gettering said catalytic element to said oxide film to remove or reduce said catalytic element existing in said crystalline semiconductor film.

7. A method of manufacturing a semiconductor device as claimed in claim 6, further comprising a fifth step of removing said oxide film after said fourth step.

8. A method of manufacturing a semiconductor device, comprising:

a first step of forming a semiconductor film;

a second step of holding a catalytic element which promote the crystallization of said semiconductor film in contact with said semiconductor film;

a third step of irradiating a laser beam whose irradiation area in one shot is 10 cm^2 or more to said semiconductor film to crystallize said semiconductor film and to form a crystalline semiconductor film; and

a fourth step of selectively adding phosphorus or boron to said crystalline semiconductor film and gettering said catalytic element to said added region by conducting a heat treatment to remove or reduce said catalytic element existing in said crystalline semiconductor film.

9. A method of manufacturing a semiconductor device as claimed in claim 1, 2, 3, 4, 5, 6 or 8, wherein the pulse width of the laser beam irradiated in the third step is 600 nsec to 1 msec.

10. A method of manufacturing a semiconductor device as claimed in claim 1, 2, 3, 4, 5, 6 or 8, wherein the laser energy density of the laser beam irradiated in the third step is 100 to 800 mJ/cm^2.

11. A method of manufacturing a semiconductor device as claimed in claim 1, 2, 3, 4, 5, 6 or 8, wherein said catalytic element is at least one element selected from a group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Au, Ge, Pb and In.

12. A method of manufacturing a semiconductor device as claimed in claim 1, 2, 3, 4, 5, 6 or 8, wherein said semiconductor film comprises silicon.

13. A method of manufacturing a semiconductor device as claimed in claim 1, 2, 3, 4, 5, 6 or 8, wherein said crystalline semiconductor film has crystals of which crystal lattices are continuously coupled with each other.

14. A semiconductor device including an active region which uses a crystalline semiconductor film and is disposed on an insulating surface, wherein said active region is formed by holding a catalytic element in a solution in contact with a semiconductor film and irradiating a laser beam or intense light thereto.

15. A semiconductor device including an active region which uses a crystalline semiconductor film and is disposed on an insulating surface, wherein said active region is formed by holding a compound containing a catalytic element in contact with a semiconductor film and irradiating a laser beam or intense light thereto.

16. A semiconductor device including an active region which uses a crystalline semiconductor film and is disposed on an insulating surface, wherein said active region is formed by selectively holding a catalytic element in a solution in contact with a semiconductor film and irradiating a laser beam or intense light thereto to allow crystal growth from said region where the catalytic element is held toward a periphery of said region.

17. A semiconductor device including an active region which uses a crystalline semiconductor film and is disposed on an insulating surface, wherein said active region is formed by selectively holding a compound containing a catalytic element in contact with a semiconductor film and irradiating a laser beam or intense light thereto to allow crystal growth from said region where the catalytic element is held toward a periphery of said region.

18. A semiconductor device as claimed in claim 14, 15, 16 or 17, wherein said catalytic element is at least one element selected from a group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, Cu, Au, Ge, Pb and In.

19. A semiconductor device as claimed in claim 14, 15, 16 or 17, wherein said crystalline semiconductor film has crystals and crystal lattices of at least a part of said crystals are continuously coupled with each other.